

CLAIMS

I claim:

1. A pulse transducer, comprising:
- a rotor having an axis of rotation and having a plurality of magnetically switchable elements spaced around its axis and rotatable and movable along a path of travel, each of said magnetically switchable elements having at least four magnetic states;
- a sensor disposed adjacent said rotor for carrying magnetically produced electrical pulses;
- two magnets disposed adjacent said sensor to produce magnetic fields of opposite polarity along the path of travel for the plurality of magnetically switchable elements; and
- wherein as said rotor is rotated, said two magnets cause each of said magnetic elements to be magnetically switched through the four magnetic states to produce two electrical pulses in the sensor for each revolution of the rotor.

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2. The pulse transducer of claim 1, wherein the plurality of magnetically switchable elements in the rotor includes five magnetically switchable elements, and wherein ten electrical pulses are produced for one revolution of the rotor.

3. The pulse transducer of claim 2, wherein the plurality of magnetically switchable elements are equally and angularly spaced around the axis of rotation.

4. The pulse transducer of claim 1, wherein each magnetically switchable element in the rotor has a core which is magnetically switchable between two polarity states and a shell which surrounds the core and is magnetically switchable between two polarity states to provide four magnetic states for each magnetically switchable element.

5. The pulse transducer of claim 1, wherein the plurality of magnetically switchable elements are equally and angularly spaced around the axis of rotation.

6. The pulse transducer of claim 1, wherein the two magnets are stationary.

7. The pulse transducer of claim 6, wherein the two magnets are positioned diametrically across the rotor.

8. The pulse transducer of claim 1, wherein the two magnets are positioned diametrically across the rotor.

9. The pulse transducer of claim 1, wherein the sensor includes a coil of wire encircling the rotor.

10. The pulse transducer of claim 9, further comprising a carrier encircling the rotor on which the coil of wire is carried.

11. The pulse transducer of claim 1, wherein the two magnets are permanent magnets.

12. The pulse transducer of claim 1, wherein the rotor is coupled to a dial hand that rotates around a dial face having decimal numbers.

13. The pulse transducer of claim 1, wherein the rotor is coupled to a plurality of odometer number wheel through a drive mechanism.

14. The pulse transducer of claim 1, wherein the rotor of the pulse transducer is coupled to a magnetic pickup for responding to rotation of a corresponding magnetic driver in a flow meter.

15. The pulse transducer of claim 14, wherein the rotor is coupled through a gearing arrangement to the magnetic pickup for response to a flow meter, and wherein said gearing arrangement also couples said magnetic pickup to an odometer in a meter register.

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